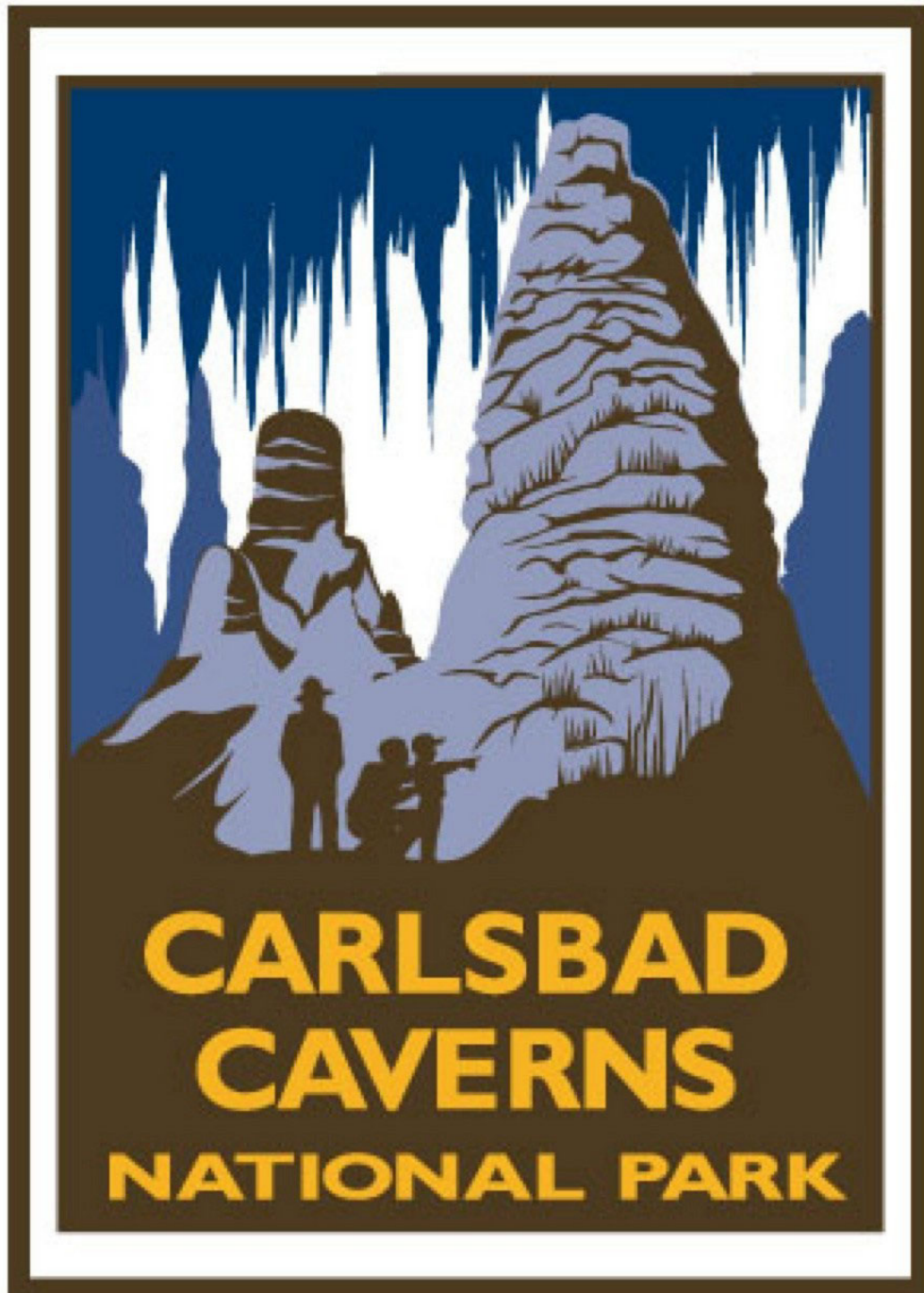


Life Science

A curriculum and activity guide for Carlsbad Caverns National Park



Middle School Ecology



Life Science

Ecology Curriculum

I. Introduction.....	1
II. Curriculum unit overview and activities	
A. The Biosphere.....	2
1. Ecosystems	
a. Oh, Deer! A game utilized to assist students in seeing the plan of nature in order to understand the need to protect Earth's resources.	3
b. Where Do I Belong? A lesson to introduce students to ecosystems, habitats, and niches of living things.	6
c. Parts to a Whole An activity to allow students to distinguish between the characteristics that make up an individual, a population, a community, and an ecosystem.	9
d. Move Over, Please! A project that allows students to see what happens when a plant population is too dense.....	13
2. Food Chain/ Food Web	
a. What's Cookin'? Students will learn the basics of food chains and food webs through various ways such as whole class activities, journaling, oral discussions, and small group activities.....	15
3. Biomes	
a. Biomes! An activity that introduces the characteristics of six biomes (desert, tundra, ocean, grasslands, forest, and rainforest).....	22
b. Desert Biome	
1. Why's It So Hot? An activity to introduce students to the various features of the desert.	26
2. Scenic Sculpture An activity using salt dough to reconstruct desert landforms.	31
3. How Do They Survive? An experiment to show the differences in temperature on the surface, below the surface of the desert, and in microhabitats. How do plants and animals survive?	36
4. Great Deserts of the World An activity using the world map to identify and locate the major deserts of the world, even the often forgotten Chihuahuan desert!!!!	40
B. Soil.....	46
1. Let's Get Down and Dirty – Soil Science A hands-on activity that introduces the basics of soil science and allows students to observe and identify different types of soils.....	47

2. Succession and Soil Compaction Students will examine the influence of soil compaction on plant and animal habitat and on water infiltration.	52
C. Water	54
1. All the Water in the World An activity to help students visualize and understand the percentage of water that is safe for drinking.....	55
2. How Much Water Do You Use? An activity to help students identify how much water they use and find ways to conserve this valuable resource.	59
3. What's In There? An activity that helps student understanding of water pollution and its potential effects on wildlife and human habitats. Students will practice techniques used by water quality examiners in their area.	64
4. Sediment as a Pollutant An activity that allows students to understand how sediment gets into bodies of water and its effects on life.	68
5. Water Pollution An activity to demonstrate the effects of detergents and fertilizers on aquatic life.	71
D. Fire	75
1. Fire 101 A lesson/activity designed to introduce students to the fire triangle.	76
2. The Tree Ring Mysteries A lesson that allows students to explore dendrochronology (studying the past by looking at tree rings) and debate controversy over prescribed burns.	79
E. Conservation	85
1. We're All Connected An activity that demonstrates the interrelationship of plants and animals in an ecosystem.	86
2. Are You Ready? An activity designed to help students learn to prepare for backcountry travel.	101
3. Where Do We Camp? An activity designed to help students learn about campsite selection.	111
III. Benchmarks and Standards	115
IV. Glossary	122
V. Resources	127



Introduction

This curriculum guide was developed for middle school teachers to be used as a resource aid in the classroom. While it was designed as a project sponsored by Carlsbad Caverns National Park and written by local area teachers from the Carlsbad School District, Carlsbad, New Mexico, the information is applicable anywhere in the country. The curriculum guide follows a format that is intended to be user-friendly and resource-rich: a unit overview provides general information concerning the specific topic and follow-up activities supplement the lesson. Content standards and benchmarks (specific to New Mexico), a glossary, and additional resources are also provided.

The education office at Carlsbad Caverns National Park hopes you find this curriculum guide useful and beneficial. For additional information concerning other curriculum materials, contact the Education Specialist, Carlsbad Caverns National Park, 3225 National Parks Highway, Carlsbad, New Mexico 88220.